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TITLE: METHOD AND SYSTEM FOR IMPLEMENTING A VEHICLE WIFI ACCESS POINT GATEWAY

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METHOD AND SYSTEM FOR IMPLEMENTING A VEHICLE WIFI ACCESS POINT GATEWAY

FIELD OF THE INVENTION

This invention relates generally to wireless communications. More specifically, the invention relates to a method and system for implementing a vehicle WiFi access point gateway.

BACKGROUND OF THE INVENTION

The opportunity to utilize wireless features is ever increasing as cellular transceivers are being transformed into entertainment as well as communication platforms. One such cellular transceiver is a wireless feature included within wireless vehicle communication and networking services for a mobile vehicle.

Typically, wireless systems within mobile vehicles (e.g., telematics units) provide voice communication. Recently, these wireless systems have been utilized to update systems within telematics units such as, for example, radio station presets.

Cellular transceivers operate within communication systems such as, for example, a telematics unit within a mobile vehicle operating within a mobile vehicle communication system (MVCS). Unfortunately, while telematics units within mobile vehicles are beneficial to both the customer as well as the manufacturer, not all customers choose to contract a telematics unit option at the time of the mobile vehicle purchase. Typically, this choice results in the vehicle being sold without the telematics unit and its aforementioned benefits.

The present invention advances the state of the art in cellular transceivers.

SUMMARY OF THE INVENTION

One aspect of the invention includes a method of operating a vehicle telematics device as a communication gateway. The method includes detecting a wireless access point with a vehicle telematics device, establishing a communication gateway between the detected wireless access point and a service provider utilizing the vehicle telematics device, and communicating data between the wireless access point and the service provider via the communication gateway.

In accordance with another aspect of the invention, a computer readable medium storing a computer program includes computer readable code for detecting a wireless access point with a vehicle telematics device, computer readable code for establishing a communication gateway between the detected wireless access point and a service provider utilizing the vehicle telematics device, and computer readable code for communicating data between the wireless access point and the service provider via the communication gateway.

In accordance with yet another aspect of the invention, a system for operating a vehicle telematics device as a communication gateway is provided. The system includes means for detecting a wireless access point with a vehicle telematics device. Means for establishing a communication gateway between the detected wireless access point and a service provider utilizing the vehicle telematics device is provided. Means for communicating data between the wireless access point and the service provider via the communication gateway is also provided.

The aforementioned, and other features and advantages of the invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying drawings. The detailed description and drawings are merely illustrative of the invention rather than limiting, the scope of the invention being defined by the appended claims and equivalents thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an operating environment for implementing wireless communication within a mobile vehicle communication system;

FIG. 2 is a block diagram of a telematics based system in accordance with an embodiment of the present invention; and

FIG. 3 is a flow diagram of one embodiment of a method of operating a vehicle telematics device as a communication gateway, in accordance with the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates one embodiment of a system for data transmission over a wireless communication system, in accordance with the present invention at **100**. Mobile vehicle communication system (MVCS) **100** includes a mobile vehicle communication unit (MVCU) **110**, a vehicle communication network **112**, a telematics unit **120**, one or more wireless carrier systems **140**, one or more communication networks **142**, one or more land networks **144**, one or more satellite broadcast systems **146**, one or more client, personal, or user computers **150**, one or more web-hosting portals **160**, and one or more call centers **170**. In one embodiment, MVCU **110** is implemented as a mobile vehicle equipped with suitable hardware and software for transmitting and receiving voice and data communications. MVCS **100** may include additional components not relevant to the present discussion. Mobile vehicle communication systems and telematics units are known in the art.

MVCU **110** is also referred to as a mobile vehicle in the discussion below. In operation, MVCU **110** may be implemented as a motor vehicle, a marine vehicle, or as an aircraft. MVCU **110** may include additional components not relevant to the present discussion.

MVCU **110**, via a vehicle communication network **112**, sends signals to various units of equipment and systems (detailed below) within MVCU **110** to perform various functions such as unlocking a door, opening the trunk, setting personal comfort settings, and calling from telematics unit **120**. In facilitating interactions among the various communication and electronic modules, vehicle communication network **112** utilizes network interfaces such as controller-area network (CAN), International Organization for Standardization (ISO) Standard 9141, ISO Standard 11898 for high-speed applications, ISO Standard 11519 for lower speed applications, and Society of Automotive Engineers (SAE) Standard J1850 for high-speed and lower speed applications.

MVCU **110**, via telematics unit **120**, sends to and receives radio transmissions from wireless carrier system **140**. Wireless carrier system **140** is implemented as any suitable system for transmitting a signal from MVCU **110** to communication network **142**.

Telematics unit **120** includes a digital signal processor (DSP) **122** connected to a wireless modem **124**, a global positioning system (GPS) unit **126**, an in-vehicle memory **128**, a microphone **130**, one or more speakers **132**, and an embedded or in-vehicle mobile phone **134**. In other embodiments, telematics unit **120** may be implemented without one or more of the above listed components such as, for example, speakers **132**. Telematics unit **120** may include additional components not relevant to the present discussion.

In one embodiment, DSP **122** is implemented as a microcontroller, controller, host processor, or vehicle communications processor. In an example, DSP **122** is implemented as an application specific integrated circuit (ASIC). In another embodiment, DSP **122** is implemented as a processor working in conjunction with a central processing unit (CPU) performing the function of a general purpose processor. GPS unit **126** provides longitude and latitude coordinates of the vehicle responsive to a GPS broadcast signal received from

one or more GPS satellite broadcast systems (not shown). In-vehicle mobile phone **134** is a cellular-type phone such as, for example, a digital, dual-mode (e.g., analog and digital), dual-band, multi-mode or multi-band cellular phone.

DSP **122** executes various computer programs that control programming and operational modes of electronic and mechanical systems within MVCU **110**. DSP **122** controls communications (e.g., call signals) between telematics unit **120**, wireless carrier system **140**, and call center **170**. Additionally, DSP **122** controls reception of communications from satellite broadcast system **146**. In one embodiment, a voice-recognition application is installed in DSP **122** that can translate human voice input through microphone **130** to digital signals. DSP **122** generates and accepts digital signals transmitted between telematics unit **120** and a vehicle communication network **112** that is connected to various electronic modules in the vehicle. In one embodiment, these digital signals activate the programming mode and operation modes, as well as provide for data transfers such as, for example, data over voice channel communication. In this embodiment, signals from DSP **122** are translated into voice messages and sent out through speaker **132**.

Wireless carrier system **140** is a wireless communications carrier or a mobile telephone system and transmits to and receives signals from one or more MVCU **110**. Wireless carrier system **140** incorporates any type of telecommunications in which electromagnetic waves carry signal over part of or the entire communication path. In one embodiment, wireless carrier system **140** is implemented as any type of broadcast communication in addition to satellite broadcast system **146**. In another embodiment, wireless carrier system **140** provides broadcast communication to satellite broadcast system **146** for download to MVCU **110**. In an example, wireless carrier system **140** connects communication network **142** to land network **144** directly. In another example, wireless carrier system **140** connects communication network **142** to land network **144** indirectly via satellite broadcast system **146**.

Satellite broadcast system **146** transmits radio signals to telematics unit **120** within MVCU **110**. In one embodiment, satellite broadcast system **146** may broadcast over a spectrum in the "S" band (2.3 GHz) that has been allocated by the U.S. Federal Communications Commission (FCC) for nationwide broadcasting of satellite-based Digital Audio Radio Service (DARS).

In operation, broadcast services provided by satellite broadcast system **146** are received by telematics unit **120** located within MVCU **110**. In one embodiment, broadcast services include various formatted programs based on a package subscription obtained by the user and managed by telematics unit **120**. In another embodiment, broadcast services include various formatted data packets based on a package subscription obtained by the user and managed by call center **170**. In an example, data packets received by telematics unit **120** are implemented by DSP **122**. In another example, data packets received by telematics unit **120** are communicated (see **FIG. 2** and discussion, below) to modified MVCUs within the MVCS.

Communication network **142** includes services from one or more mobile telephone switching offices and wireless networks. Communication network **142** connects wireless carrier system **140** to land network **144**. Communication network **142** is implemented as any suitable system or collection of systems for connecting wireless carrier system **140** to MVCU **110** and land network **144**.

Land network **144** connects communication network **142** to client computer **150**, web-hosting portal **160**, and call center **170**. In one embodiment, land network **144** is a public-switched telephone network (PSTN). In another embodiment, land network **144** is implemented as an Internet protocol (IP) network. In other embodiments, land network **144** is implemented as a wired network, an optical network, a fiber network, other wireless networks, or any combination thereof. Land network **144** is connected to one or more landline telephones. Communication network **142** and land network **144** connect wireless carrier system **140** to web-hosting portal **160** and call center **170**.

Client, personal, or user computer **150** includes a computer usable medium to execute Internet browser and Internet-access computer programs for sending and receiving data over land network **144** and, optionally, wired or wireless communication networks **142** to web-hosting portal **160**. Personal or client computer **150** sends user preferences to web-hosting portal **160** through a web-page interface using communication standards such as hypertext transport protocol (HTTP), and transport-control protocol and Internet protocol (TCP/IP). In one embodiment, the data includes directives to change certain programming and operational modes of electronic and mechanical systems within MVCU **110**.

In operation, a client utilizes computer **150** to initiate setting or re-setting of user preferences for MVCU **110**. In an example, a client utilizes computer **150** to provide radio station presets as user preferences for MVCU **110**. User-preference data from client-side software is transmitted to server-side software of web-hosting portal **160**. In an example, user-preference data is stored at web-hosting portal **160**.

Web-hosting portal **160** includes one or more data modems **162**, one or more web servers **164**, one or more databases **166**, and a network system **168**. Web-hosting portal **160** is connected directly by wire to call center **170**, or connected by phone lines to land network **144**, which is connected to call center **170**. In an example, web-hosting portal **160** is connected to call center **170** utilizing an IP network. In this example, both components, web-hosting portal **160** and call center **170**, are connected to land network **144** utilizing the IP network. In another example, web-hosting portal **160** is connected to land network **144** by one or more data modems **162**. Land network **144** sends digital data to and receives digital data from modem **162**, data that is then transferred to web server **164**. Modem **162** may reside inside web server **164**. Land network **144** transmits data communications between web-hosting portal **160** and call center **170**.

Web server **164** receives user-preference data from user computer **150** via land network **144**. In alternative embodiments, computer **150** includes a wireless modem to send data to web-hosting portal **160** through a wireless communication network **142** and a land network **144**. Data is received by land network **144** and sent to one or more web servers **164**. In one embodiment, web server **164** is implemented as any suitable hardware and software capable of providing web services to help change and transmit personal preference settings from a client at computer **150** to telematics unit **120** in MVCU **110**. Web server **164** sends to or receives from one or more databases **166** data transmissions via network system **168**. Web server **164** includes computer applications and files for managing and storing personalization settings supplied by the client, such as door lock/unlock behavior, radio station preset selections, climate controls, custom button configurations and theft alarm settings. For each client, the web server potentially stores hundreds of preferences for wireless vehicle communication, networking, maintenance and diagnostic services for a mobile vehicle.

In one embodiment, one or more web servers **164** are networked via network system **168** to distribute user-preference data among its network components such as database **166**. In an example, database **166** is a part of or a separate computer from web server **164**. Web server **164** sends data transmissions with user preferences to call center **170** through land network **144**.

Call center **170** is a location where many calls are received and serviced at the same time, or where many calls are sent at the same time. In one embodiment, the call center is a telematics call center, facilitating communications to and from telematics unit **120** in MVCU **110**. In an example, the call center is a voice call center, providing verbal communications between an advisor in the call center and a subscriber in a mobile vehicle. In another example, the call center contains each of these functions. In other embodiments, call center **170** and web-hosting portal **160** are located in the same or different facilities.

Call center **170** contains one or more voice and data switches **172**, one or more communication services managers **174**, one or more communication services databases **176**, one or more communication services advisors **178**, and one or more network systems **180**.

Switch **172** of call center **170** connects to land network **144**. Switch **172** transmits voice or data transmissions from call center **170**, and receives voice or data transmissions from telematics unit **120** in MVCU **110** through wireless carrier system **140**, communication network **142**, and land network **144**. Switch **172** receives data transmissions from and sends data transmissions to one or more web-hosting portals **160**. Switch **172** receives data transmissions from or sends data transmissions to one or more communication services managers **174** via one or more network systems **180**.

Communication services manager **174** is any suitable hardware and software capable of providing requested communication services to telematics unit **120** in MVCU **110**. Communication services manager **174** sends to or receives from one or more communication services databases **176** data transmissions via network system **180**. Communication services manager **174** sends to or receives from one or more communication services advisors **178** data transmissions via network system **180**. Communication services database **176** sends to or receives from communication services advisor **178** data transmissions via network system **180**. Communication services advisor **178** receives from or sends to switch **172** voice or data transmissions.

Communication services manager **174** provides one or more of a variety of services including initiating data over voice channel wireless communication, enrollment services, navigation assistance, directory assistance, roadside assistance, business or residential assistance, information services assistance, emergency assistance, and communications assistance. Communication services manager **174** receives service-preference requests for a variety of services from the client via computer **150**, web-hosting portal **160**, and land

network **144**. Communication services manager **174** transmits user-preference and other data such as, for example primary diagnostic script to telematics unit **120** in MVCU **110** through wireless carrier system **140**, communication network **142**, land network **144**, voice and data switch **172**, and network system **180**. Communication services manager **174** stores or retrieves data and information from communication services database **176**. Communication services manager **174** may provide requested information to communication services advisor **178**.

In one embodiment, communication services advisor **178** is implemented as a real advisor. In an example, a real advisor is a human being in verbal communication with a user or subscriber (e.g., a client) in MVCU **110** via telematics unit **120**. In another embodiment, communication services advisor **178** is implemented as a virtual advisor. In an example, a virtual advisor is implemented as a synthesized voice interface responding to requests from telematics unit **120** in MVCU **110**.

Communication services advisor **178** provides services to telematics unit **120** in MVCU **110**. Services provided by communication services advisor **178** include enrollment services, navigation assistance, real-time traffic advisories, directory assistance, roadside assistance, business or residential assistance, information services assistance, emergency assistance, automated vehicle diagnostic function, and communications assistance. Communication services advisor **178** communicates with telematics unit **120** in MVCU **110** through wireless carrier system **140**, communication network **142**, and land network **144** using voice transmissions, or through communication services manager **174** and switch **172** using data transmissions. Switch **172** selects between voice transmissions and data transmissions.

In operation, an incoming call is routed to telematics unit **120** within mobile vehicle **110** from call center **170**. In one embodiment, the call is routed to telematics unit **120** from call center **170** via land network **144**, communication network **142**, and wireless carrier system **140**. In another embodiment, an outbound communication is routed to telematics unit **120** from call center **170** via land network **144**, communication network **142**, wireless carrier system **140** and satellite broadcast system **146**. In this embodiment, an inbound communication is routed to call center **170** from telematics unit **120** via wireless carrier system **140**, communication network **142**, and land network **144**.

FIG. 2 is a block diagram of a telematics based system in accordance with an embodiment of the present invention. **FIG. 2** shows a telematics based system **200** for operating a vehicle telematics device as a communication gateway.

In **FIG. 2**, the system includes a primary mobile vehicle **210**, a secondary mobile vehicle **250**, and a service provider **270** such as, for example, a call center, a service center, and the like. Primary mobile vehicle **210** includes a telematics unit **220** coupled to one or more vehicle system modules **290** via a vehicle communication network **212**. Primary mobile vehicle **210** additionally includes a primary antenna **211** and a secondary antenna **251**. Primary antenna **211** is coupled (not shown) to telematics unit **220** to communicate with a wireless carrier system as well as receive wireless communication from a satellite broadcast system. Secondary antenna **251** is coupled (not shown) to telematics unit **220** to communicate with wireless access points (e.g., wireless modem unit **260** of secondary mobile vehicle **250**) utilizing short range communication protocol as described below. In another embodiment, the functionality of primary antenna **211** and secondary antenna **251** is combined and performed by primary antenna **211**.

Secondary mobile vehicle **250** includes a wireless modem unit **260** coupled to one or more vehicle system modules **290** via a vehicle communication network **212**. Secondary mobile vehicle **250** additionally includes a secondary antenna **251**. Secondary antenna **251** is coupled (not shown) to wireless modem unit **260** to communicate with a communication gateway (e.g., telematics unit **220** of primary mobile vehicle **210**) utilizing a short range communication protocol. In one embodiment, the short range communication protocol is a short range wireless communication protocol such as, for example, 802.11 series or Bluetooth® as is known in the art. In an example, the short range wireless communication protocol is an 802.11 series such as, for example, Wi-Fi, direct-sequence spread spectrum (DFSS), frequency-hopping spread spectrum (FHSS), or shared wireless access protocol (SWAP).

Telematics unit **220** further includes a database **228** that contains programs **231**, program data **232**, data storage **233** and triggers **234**. A vehicle system module (VSM) **290** is included within primary mobile vehicle **210** as well as secondary mobile vehicle **250** and each further includes a program **291** and data **292**. In one embodiment, VSM **290** within primary mobile vehicle **210** is located within telematics unit **220**. Vehicle system module (VSM) **290** within secondary mobile vehicle **250** functions as described below with respect to primary mobile vehicle **210**. Wireless modem unit **260** further includes a database **288** that contains programs **281**, program data **282**, data storage **283**, and triggers **284**. In one embodiment, VSM **290** is in communication with wireless modem unit **260**. Service provider **270** further includes a database **276** that contains programs **271**, data storage **273**, and triggers **274**. In **FIG. 2**, the elements are presented for illustrative purposes and are not intended to be limiting. Telematics-based system **200** may include additional components not relevant to the present discussion.

Telematics unit **220** is any telematics device enabled for operation with a telematics service provider such as, for example, telematics unit **120** as described with reference to **FIG. 1**. Telematics unit **220** in vehicle **210** is in communication with service provider **270** (e.g., a "service center"). In one embodiment, data communicated between service provider **270** and telematics unit **220** is pre-packaged at service provider **270** for compatibility with a wireless access point protocol. In an example, the data is pre-packaged utilizing a cellular packet protocol such as, for example, Single Carrier Radio Transmission Technology (1XRTT) or Evolution Data Only (EvDO). Telematics unit **220** includes volatile and non-volatile memory components for storing data and programs. In one embodiment, memory components in telematics unit **220** contain database **228**.

Database **228** includes one or more programs **231** for operating telematics unit **220**, for example, for operating a vehicle telematics device as a communication gateway. In operation, program **231** receives instructions and data in the form of a data stream from service provider **270** at data storage **233**. Program **231** executes the instructions such as, for example, by parsing the data stream for additional instructions as well as data and triggers. In one embodiment, program **231** parses the data stream and stores triggers at triggers **234** and transfers data to VSM **290** for execution. In another embodiment, program **231** parses the data stream and sends data to secondary antenna **251** for transmission to secondary mobile vehicle **250** for execution.

Wireless modem unit **260** is any wireless modem device enabled for operation with a communication gateway such as, for example, telematics unit **220** as described above. Wireless modem unit **260**, in secondary mobile vehicle **250**, is in communication with telematics unit **220** within primary mobile vehicle **210**. Wireless modem unit **260** includes volatile and non-volatile memory components for storing data and programs. In one embodiment, memory components in wireless modem unit **260** contain database **288**.

Database **288** includes one or more programs **281** for operating wireless modem unit **260**, for example, for operating a vehicle wireless modem unit as a wireless access point. In operation, program **281** receives instructions and data in the form of a data stream from telematics unit **220** of primary mobile vehicle **210** via antenna **251** at data storage **283**. Program **281** executes the instructions such as, for example, by parsing the data stream for additional instructions as well as data and triggers. In one embodiment, program **281** parses the data stream and stores triggers at triggers **284** and transfers data to VSM **290** for execution. In an example, program **281** executes the instructions immediately upon reception of the data stream. In another example, program **281** executes the instructions at a predetermined time such as when a predetermined event occurs, for example, upon activation of a trigger located in triggers **284**. Examples of instructions and associated data included within the data stream include a diagnostic test script, a vehicle system software update, and the like.

Vehicle system module (VSM) **290** is any vehicle system control module having software and hardware components for operating, controlling. or monitoring one or more vehicle systems. In one embodiment, VSM **290** is a sensor and provides diagnostic data collected from primary mobile vehicle **210**. In another embodiment, VSM **290** is a sensor and provides diagnostic data collected from secondary mobile vehicle **250**. In yet another embodiment, VSM **290** is a global positioning system (GPS) module such as, for example, GPS unit **126** of **FIG. 1**, and provides location information to complement diagnostic data collected from primary mobile vehicle **210**.

Vehicle system module **290** contains one or more processors, one or more memory devices, and one or more connection ports. In one embodiment, VSM **290** includes a software switch for scanning received information such as, for example, sensor information to identify that data has been received. VSM **290** is coupled to a vehicle communication network **212**, and therefore to any other device that is also coupled to vehicle communication network **212**.

In one embodiment, VSM **290** is directly coupled to telematics unit **220** in primary mobile vehicle **210**, for example, vehicle communication network **212** coupling telematics unit **220** to vehicle system module **290**. In another embodiment, VSM **290** is directly coupled to wireless modem unit **260** in secondary mobile vehicle **250**, for example, vehicle communication network **212** coupling wireless modem unit **260** to vehicle system module **290**. In an example, vehicle communication network **212** is a vehicle communication network **112** as described in **FIG. 1**, above. In another embodiment, VSM **290** is indirectly coupled to telematics unit **220**.

Service provider **270** is any service center providing telematics services, such as service center **170** described with reference to **FIG. 1**. In one embodiment, service provider **270** includes hardware and software for managing database **276**. In another embodiment, service center **270** is configured to access a database that is in another location but coupled to service center **270** such as, for example, database **166** in web server **160** as described in **FIG. 1**. Service provider **270** manages the configuring and delivery of a data stream to primary mobile vehicle **210** and to secondary mobile vehicle **250** via primary mobile vehicle **210** acting as a communication gateway.

Database **276** contains data stored at data storage **273** and trigger data stored at triggers **274**. In one embodiment, database **276** includes one or more programs **271** for managing operation of a mobile vehicle communication system (MVCS) such as, for example, MVCS **100** in **FIG. 1**, above. In this embodiment, database **276** includes one or more programs **271** for managing a MVCS, including the operating of a vehicle telematics device as a communication gateway within the MVCS. In an example, the gateway serves to communicate software updates to a plurality of vehicles in a storage facility. The trigger is, for example, notification to service center **270** from telematics unit **220** of an identification of wireless modem unit **260**. In this example, the trigger then initiates one or more programs **271** for managing operation of a mobile vehicle communication system (MVCS) based on the trigger.

In operation, telematics unit **220** detects a wireless access point (e.g., wireless modem unit **260**) and establishes a communication gateway, utilizing telematics unit **220**, between the detected wireless access point and service provider **270**. Data is then communicated between the wireless access point and the service provider via the communication gateway. In an example and referring to **FIGS. 1** and **2** above, during communication telematics unit **220** communicates with wireless modem unit **260** utilizing short range communication protocol. In this example, during communication telematics unit **120, 220** communicates with service provider **270**/call center **170**. In one embodiment, communication between telematics unit **120/220** and service provider **270**/call center **170** is conducted as described in **FIG. 1**, above. The communication via the communication gateway allows the service provider/call center to access an otherwise potentially inaccessible mobile vehicle utilizing the mobile vehicle's wireless modem unit.

FIG. 3 is a flow diagram of one embodiment of a method of operating a vehicle telematics device as a communication gateway. In **FIG. 3**, method **300** may utilize one or more systems and concepts detailed in **FIGS. 1** and **2**, above. The present invention can also take the form of a computer usable medium including a program for configuring an electronic module within a vehicle. The program stored in the computer usable medium includes computer program code for executing the method steps described in **FIG. 3**. In **FIG. 3**, method **300** begins at step **310**.

At step **320**, a wireless access point is detected with a vehicle telematics device. In one embodiment, detecting the wireless access point includes receiving a transmission from a wireless modem unit. In an example and referring to **FIG. 2** above, telematics unit **220** detects wireless modem unit **260** by receiving a transmission from wireless modem unit **260**. In another embodiment, detecting the wireless access point includes transmitting a polling message from the vehicle telematics device and receiving a response, generated by the

wireless access point, to the polling message. In an example and referring to **FIG. 2** above, telematics unit **220** detects wireless modem unit **260** by transmitting a polling message from telematics unit **220** and receiving a response, generated by wireless modem unit **260**, to the polling message.

At step **330**, a communication gateway is established, utilizing the vehicle telematics device, between the detected wireless access point and a service provider. In one embodiment, establishing the communication gateway between the detected wireless access point and the service provider utilizing the vehicle telematics device includes receiving identification information from the detected wireless access point, transmitting the received identification information to the service provider for authentication, receiving a data stream for the wireless access point from the service provider, and transmitting the received data stream to the wireless access point. In an example and referring to **FIG. 2** above, establishing the communication gateway between the detected wireless modem unit **260** and the service provider **270** utilizing vehicle telematics unit **220** includes receiving identification information at telematics unit **220** from the detected wireless modem unit **260**, transmitting the received identification information from telematics unit **220** to the service provider **270** for authentication, receiving a data stream to telematics unit **220** for wireless modem unit **260** from the service provider **270**, and transmitting the received data stream from telematics unit **220** to the wireless access point.

In another embodiment, establishing the communication gateway between the detected wireless access point and the service provider further includes receiving a data stream having instructions for the communication gateway from the service provider and implementing the received instructions.

In yet another embodiment, establishing the communication gateway between the detected wireless access point and the service provider includes establishing communication between the communication gateway and the detected wireless access point utilizing a first communication protocol, and establishing communication between the communication gateway and the service provider utilizing a second communication protocol. In an example, the first communication protocol and second communication protocol are a short range wireless communication protocol such as, for example, 802.11 series or Bluetooth® as is known in the art. In this example, the short range wireless communication protocol is an 802.11 series such as, for example, Wi-Fi, direct-sequence spread spectrum (DFSS), frequency-hopping spread spectrum (FHSS), or shared wireless access protocol (SWAP). In one embodiment, the first and second communication protocols are different protocols. In one embodiment, the communication protocol is any communication protocol in accord with FCC Part 15.

At step **340**, data is communicated between the wireless access point and the service provider via the communication gateway. In one embodiment, the data is pre-packaged at the service provider for compatibility with a wireless access point protocol. In an example, the data is pre-packaged utilizing a cellular packet protocol such as, for example, Single Carrier Radio Transmission Technology (1XRTT) and Evolution Data Only (EvDO).

At step **350**, the method is terminated.

The above-described methods and implementation for operating a vehicle telematics device as a communication gateway are example methods and implementations. These methods and implementations illustrate one possible approach for operating a vehicle telematics device as a communication gateway. The actual implementation may vary from the method discussed. Moreover, various other improvements and modifications to this invention may occur to those skilled in the art, and those improvements and modifications will fall within the scope of this invention as set forth in the claims below.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive.

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